DOCUMENT RESUME

ED 066 473 TM 001 957

TITLE	Fountain Salesgirl 2-27.61--Technical Report on Standardization of the General Aptitude Test Battery.
INSTITUTION	Manpower Administration (DOL), Washington, D.C. U.S. Training and Employment Service.
REPORT NO	TR-S-311
PUB DATE	Oct 64
NOTE	8p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Aptitude Tests; *Cutting Scores; Evaluation Criteria; Job Applicants; *Job Skills; Norms; Occupational Guidance; *Personnel Evaluation; *Sales Workers; Test Reliability; Test Validity
IDENTIFIERS	Fountain Salesgirls; GATB; *General Aptitude Test Battery

ABSTRACT

The United States Training and Employment Service General Aptitude Test Battery (GATB), first published in 1947, has been included in a continuing program of research to validate the tests against success in many different occupations. The GATB consists of 12 tests which measure nine aptitudes: General Learning Ability; Verbal Aptitude; Numerical Aptitude; Spatial Aptitude; Form Perception; Clerical Perception; Motor Coordination; Finger Dexterity; and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, and a standard deviation of 20. Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, when combined, predict job performance. Cutting scores are set only for those aptitudes which aid in predicting the performance of the job duties of the experimental sample. The GATB norms described are appropriate only for jobs with content similar to that shown in the job description presented in this report. A description of the validation sample is included. (AG)

ED 066473

TECHNICAL REPORT

ON

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

FOUNTAIN SALESGIRL 3-27.61

B-591 S-311

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EDUCATION & WELFARE
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TM 001 957

U. S. Employment Service
in Cooperation with
Michigan State Employment Service

October 1964

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

FOUNTAIN SALESGIRL 2-27.61

B-591 S-311

Summary

The General Aptitude Test Battery, B-1002B, was administered to a final sample of 100 workers employed as Fountain Salesgirls 2-27.61 at 28 branch stores of Fred Sanders Confectioners, Detroit, Michigan. The criterion consisted of supervisory ratings. On the basis of mean scores, standard deviations, correlations with the criterion, job analysis data, and their combined selective efficiency, Aptitudes P-Form Perception, F-Finger Dexterity, and M-Manual Dexterity were selected for inclusion in the final test norms.

GATB Norms for Fountain Salesgirl 2-27.61, B-591 S-311

B-1001			B-1002		
Aptitude	Tests	Minimum Acceptable Aptitude Score	Aptitude	Tests	Minimum Acceptable Aptitude Score
P	CB-1- A CB-1- L	75	P	Part 5 Part 7	75
F	CB-1- O CB-1- P	90	F	Part 11 Part 12	85
M	CB-1- M CB-1- N	90	M	Part 9 Part 10	85

Effectiveness of Norms

The data in Table IV indicate that only 70 percent of the non-test-selected workers used for this study were good workers; if the workers had been test-selected with the above norms, 78 percent would have been good workers. 30 percent of the non-test-selected workers used for this study were poor workers; if the workers had been test-selected with the above norms, only 22 percent would have been poor workers.

TECHNICAL REPORT

I. Purpose

This study was conducted to determine the best combination of aptitudes and minimum scores to be used as norms on the General Aptitude Test Battery for the occupation of Fountain Salesgirl 2-27.61.

II. Sample

On April 26, and May 6, 1964 the General Aptitude Test Battery, B-1002B, was administered to 102 Fountain Salesgirls 2-27.61 who were employed in 29 branch stores of Fred Sanders Confectioners in the Detroit, Michigan metropolitan area. Two workers were excluded from the final sample because their work involved bakery sales rather than fountain sales. The final sample consisted of 100 workers, 98 women and 2 men, all performing fountain saleswork in 28 branch stores. Fred Sanders Confectioners employs a total of 480 Fountain Salesgirls 2-27.61 in 53 branch stores which sell candy and baked goods and offer fountain and lunch service.

No tests are used by the company in the selection of women for employment as Fountain Salesgirls 2-27.61. The minimum age desired is 17 and although there is a desired minimum education requirement of two years of high school, all of those in the final sample did not fulfill this requirement. No previous job experience is required. An applicant must be able to read and write English, add, subtract, and compute sales tax. All applicants are interviewed before being hired. Five days of on-the-job training is given by the company. All workers in the final sample are considered experienced.

Table I shows the means, standard deviations, ranges and Pearson product-moment correlations with the criterion for the variables of age, education and experience.

TABLE I

Means (M), Standard Deviations (σ), Ranges, and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education and Experience

N = 100	M	σ	Range	r
Age (years)	34.1	12.6	17-63	.063
Education (years)	11.3	1.5	7-16	.040
Experience (months)	49.0	44.9	3-211	-.021

III. **Job Description**

Job Title: Fountain Salesgirl 2-27.61

Job Summary:

Works at lunch counter preparing and serving customers with food and beverages.

Work Performed:

Greets customer pleasantly and takes order: Reaches under counter, picks up menu and napkin and places them on counter. Fills dixie cup with water and serves to customer. Takes order by writing item ordered and price on guest check. Determines appropriate place-setting from customer order, picks silverware from trays below counter and places them on napkin.

Prepares fountain beverages: Grasps dixie cup holder from stack. Inserts dixie cup liner into dixie holder by forcing holder over inverted stack of liners. Holds cups under beverage dispenser and fills up by depressing dispenser handle. Prepares malted milks and milk shakes. Picks up paper malt cup and steel malt collar and places collar in cup. Scoops ice cream in cup and adds necessary amount of other ingredients such as milk, malt and flavoring. Starts mixer by slipping steel collar under clip which contains starter button and secures bottom of cup on clip of mixer stand. Removes cup from mixer after desired consistency is reached and separates collar from cup.

Prepares ice cream dishes: Inserts ice cream dixie cup liner into appropriate dixie holder. Carries dixie cup to ice cream freezer compartment. Picks up appropriate scoop from rack, scoops out ice cream and places it in cup. Using ladle, dips out appropriate topping and places it over the ice cream. Dips scoop in rinse water and places back on rack.

Serves pre-prepared food. Picks up appropriate dish from stack. Carries dish to sandwich bin and picks out ordered style sandwich from appropriate bin. Places sandwich on plate. Serves pre-prepared food such as mashed potatoes, gravy, and soups from inserts.

Serves desserts. Picks up plate from under counter and places it on serving area. Opens door of dessert rack, picks out appropriate cake or pie pan and using pie or cake server puts pre-sliced portions on plate.

Totals guest check, adds sales tax and presents check to customer. Collects money and operates cash register by depressing appropriate key to register amount of charge. Checks register to ascertain that correct amount has been registered. Determines correct change and counts it back to customer.

Prepares coffee on "Cory" coffee maker. Places paper filter in funnel and dumps pre-weighted package of coffee into funnel. Levels the bed of coffee and inserts funnel in hood guides. Picks up and places empty coffee bowl in middle warmer under funnel. Presses starter button.

May prepare sandwiches. Picks appropriate dish from stack and carries dish to work area. Determines type of bread and sandwich ingredients, such as luncheon meats, lettuce, and dressings from storage area beneath work table. Places slice of bread on plate, arranges ingredients on bread slice, and completes sandwich by placing remaining bread slice over ingredients. Garnishes dish to give appetizing appearance.

Cleans counter area. Removes dixie cups, dishes, silverware and dixie holders to basket located under counter. Places dixie cup liners and napkins in waste basket. Wipes counter clean with damp cloth. Washes dishes. Carries full basket of used dishes from storage area under counter to dishwashing machine. Stacks dishes in racks by standing plates and flat dishes on edge. Places cups, glasses and bowls bottom up in flat bottom racks. Scatters silverware and butter chip plates loosely over screen bottom of rack. Opens hood by grasping and lifting handle. Slides rack of dishes in dishwashing machine, making sure that rack is turned so that the plates stand at right angles to the edge of the table. Starts machine by closing hood and turning control handle to wash position. Allows handle to remain at wash position for 75 seconds, then turns it to rinse position and holds in place for 12 seconds. Opens opposite side of hood and slides rack out on clean dish table. Stacks dishes and sorts silverware, placing in silverware bin.

Aids in closing counter. Using a soda water solution, daily washes water solution, daily washes and wipes dry bottom part of counter. Cleans top of counter by using "Pumice" soap and "Brillo" pad. Using soda water solution, daily washes, wipes dry, and oils dishwashing machine and surrounding stainless steel area. Removes wastepaper baskets and sweeps floor area behind counter.

IV. Experimental Battery

All the tests of the GATB, B-100ZB , were administered to the sample group.

V. Criterion

During the period of May 12, 1964 through July 8, 1964, supervisory ratings and reratings, based on a descriptive rating scale designed for this study, were prepared by the Fountain Supervisors. The rating scale consisted of 8 items covering different aspects of job performance, with 5 alternatives for each item. Weights of 1 through 5, indicating the degree of job proficiency attained, were assigned to the alternatives. A correlation coefficient of .891 was obtained between the two sets of ratings. Therefore, the two ratings were combined, resulting in a distribution of final criterion scores of 34-77, with a mean of 55.4 and a standard deviation of 9.7.

VI Qualitative and Quantitative Analyses

A. Qualitative Analysis

On the basis of the job analysis data, the following aptitudes were rated "important" for success in this occupation:

Verbal Aptitude (V) - required in greeting customer; taking and interpreting customer's order; explaining menu items to customer; and in following supervisor's orders and directions.

Numerical Aptitude (N) - required in preparing and totaling customer's check; computing sales tax; and determining correct change.

Form Perception (P) - required in arranging food appetizingly; in selecting correct silverware, dishes, scoops, and ingredients.

Motor Coordination (K) - required in preparing fountain beverages and ice cream dishes; in serving prepared foods; and in handling dishes and loading dishwasher.

Finger Dexterity (F) - required in picking up and placing of napkins, silverware, dishes and menus; in placing paper cups in steel collars in preparation of malted milks and milk shakes.

Manual Dexterity (M) - required in placing and removal of dishes; in ladling and scooping of ice cream and food; in loading dishwasher.

B. Quantitative Analysis:

TABLE II

Means (M), Standard Deviations (σ), and Pearson Product-Moment Correlations with the Criterion (r) for the Aptitudes of the GATB; N = 100

Aptitudes	M	σ	r
G-Intelligence	95.0	18.3	.035
V-Verbal Aptitude	97.8	17.6	-.000
N-Numerical Aptitude	95.3	18.1	.110
S-Spatial Aptitude	95.2	19.7	.051
P-Form Perception	101.4	21.0	.112
Q-Clerical Perception	103.6	15.4	.141
K-Motor Coordination	104.1	15.3	.105
F-Finger Dexterity	99.0	19.5	.209*
M-Manual Dexterity	102.1	20.8	.280**

*Significant at the .05 level.
**Significant at the .01 level.

C. Selection of Test Norms:

TABLE III

Summary of Qualitative and Quantitative Data

Type of Evidence	Aptitudes								
	G	V	N	S	P	Q	K	F	M
Job Analysis Data									
Important		X	X		X		X	X	X
Irrelevant									
Relatively High Mean					X	X	X		X
Relatively Low Sigma									
Significant Correlation with Criterion								X	X
Aptitudes to be Considered for Trial Norms					P		K	F	M

Trial norms consisting of various combinations of Aptitudes P, K, F and M with appropriate cutting scores were evaluated against the criterion by means of the Phi Coefficient technique. A comparison of the results showed that B-1002 norms consisting of P-75, F-85 and M-85 had the best selective efficiency.

VII. Validity of Norms

The validity of the norms was determined by computing a Phi Coefficient between the test norms and the criterion and applying the Chi Square test. The criterion was dichotomized by placing 30 percent of the sample in the low criterion group because this percent was considered to be the unsatisfactory or marginal workers.

Table IV shows the relationship between test norms consisting of Aptitudes P, F and M with critical scores of 75, 85 and 85 respectively, and the dichotomized criterion for Fountain Salesgirl 2-27.61. Workers in the high criterion group have been designated as "good workers" and those in the low criterion group as "poor workers."

TABLE IV

Validity of Test Norms for Fountain Salesgirl 2-27.61
(P-75, F-85, M-85)

N = 100	Non-Qualifying Test Scores	Qualifying Test Scores	Total
Good Workers	16	54	70
Poor Workers	15	15	30
Total	31	69	100

Phi Coefficient = .269
χ^2 = 7.236
P/2 < .005

The data in the above table indicate a significant relationship between the test norms and the criterion for the sample.

VIII. Conclusions

On the basis of the results of this study, Aptitudes P, F and M with minimum scores of 75, 85 and 85, respectively, have been established as B-1002 norms for Fountain Salesgirl 2-27.61. The equivalent B-1001 norms consist of P-75, F-90 and M-90.

IX. Determination of Occupational Aptitude Pattern

The data for this study met the requirements for incorporating the occupation studied into OAP-32 which is shown in Section II of the Guide to the Use of the General Aptitude Test Battery, January 1952.